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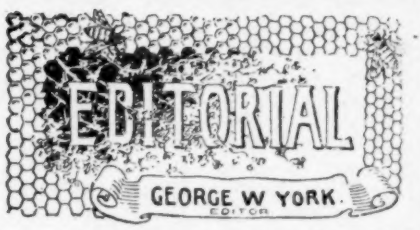


Condensed Reports from the members of the Illinois State Bee-Keepers' Association will be found on page 792 of this number of the BEE JOURNAL. They show the honey prospects, number of colonies, etc.

Bees and Horticulture is a subject that has received much consideration of late in various parts of the country, particularly in California. Bro. C. P. Dadant, on page 790 of this issue of the BEE JOURNAL, gives something very interesting and conclusive on this subject. It will pay you to read it, and also remember what he says.

Honey in a Petrified Tree.—In *Science Siftings* is an account of an interesting find reported to have been made in Texas. While workmen were digging a well on a farm near Bandora, they unearthed a petrified tree at a depth of 46 feet. The tree was hollow, and the cavity was filled with honey. The comb was in a perfect state of preservation, and the cells were filled with honey that tasted sweet, fresh and pure. How old this honey is cannot be known, but it must have taken centures to have buried the tree to that depth, and caused its petrification by natural causes.

Sulphur for Bee-Paralysis.—In the *Australian Bee-Bulletin* for April, which we received June 11th, we find the following from a correspondent on the use of powdered sulphur for curing bee-paralysis:

Some few days ago I wrote you that I was trying the sulphur cure for bee-paralysis, and in your reply you asked me to let you know the results. Well, I can say conscientiously that it is the best cure I have tried yet. I have 20 colonies, and all were suffering more or less, with the exception of hives with the full width of end open. I gave the frames and bees a good powdering, using about four pounds of sulphur on the 20 hives; I only gave them the one dose, and the disease is thoroughly cured.

The use of sulphur in the treatment of bee-paralysis may have been suggested before, but if so we have failed to see it. It certainly is a simple remedy, and we should be glad to hear from those who have tried it in this country. If it has not been used, perhaps some bee-keeper whose bees are suffering from the disease will at once apply the sulphur remedy, aud then report results to the BEE JOURNAL.

No Cause for It!—A little Buffalo girl visiting in the country was stung by a bee. She didn't seem to mind the pain so very much, but, as her disposition was sensitive, she ran sobbing to her mother with the statement: "I don't see what he did it for, 'cause I hadn't done a thing to him!"

The Amateur Bee-Keeper.—This is the name of a book written by Prof. J. W. Rouse, of Missouri. Here is what the *Bee-Keepers' Review* says of it:

A book for beginners is something often called for. Mr. J. W. Rouse has written a

book of 52 pages, called "The Amateur Bee-Keeper," that is designed to satisfy just this demand. It tells very briefly and clearly just those things that a beginner would like to know. It is well illustrated, and well printed.

In calling attention to Mr. Rouse's valuable little work, *Gleanings* spoke thus about it:

The "Amateur Bee-Keeper," by J. W. Rouse, is the name of a sprightly little work intended especially for beginners. It seems to be correct in method, and reliable and orthodox in its teachings. It covers the whole range of practical apiculture, and yet is sufficiently full so as not to be misleading.

We have a few of these 25-cent books left, and if ordered before Aug. 1st, we will mail them at 20 cents each, or club it with the BEE JOURNAL for one year—both for only $1.10.

☞ The package in which extracted honey will sell best, must be decided by the demand.—*Quinby.*

The Family of Bro. W. J. Cullinan are in deep sorrow, caused by the death of their darling baby boy on June 8th. We received the following letter from Bro. Cullinan just a little too late for last week's number of the BEE JOURNAL:

FRIEND YORK:—For the first time in ten years of married life the Angel of Death has entered our household and taken from us our little 8-months'-old son—Lewis J. M.—which sad event occurred on Friday afternoon, June 8th. Just as he was twining himself into our affections, God called him to join the angel choirs in Heaven. We were loth to give him up, but we bow in humble submission to His holy will, and trust that our lives may be so modeled that when our task on earth is ended, we may be prepared to meet our little angel in that bright haven of eternal rest, where all is joy and peace and love, and where sickness, sorrow and *death* may not enter in.

Quincy, Ill. W. J. CULLINAN.

The bereaved family have our sincere sympathy in their sadness, and doubtless that of all the readers of the BEE JOURNAL.

Real Estate.—We have received the following from some one who signs himself "Business:"

MR. EDITOR:—Wouldn't it be a good idea to have the real estate department separate? In the BEE JOURNAL for June 7th, is a page and a half from Dr. Gallup. He is an interesting writer, and I have no fault to find with your publishing his article, but ought you to oblige me to read it? Perhaps you think you don't. Well, it's this way. I don't want to lose any chance of learning about bees, so for fear I would lose if I didn't read it, I am obliged to read through the page and a half without finding a thing about bees. When I'm very much hurried with my work, and don't care a straw about California real estate, I submit that I feel a little vexed. Still, if there's no way of helping it, there's so much about bees that's of value that I'll wade through all the stuff you choose to put in if you think the rest of the family want it. BUSINESS.

Well, to tell the truth, we do feel sorry for "Business," for no doubt he's a very busy man, and ought not to be required to "wade through" so much "stuff." But we supposed everybody was interested in anything about California, whether on bees or otherwise, and had thought a little VARIETY in the contents of the BEE JOURNAL would not be seriously objected to. We believe this is the first criticism of the kind we have ever received, so we don't think that the objection obtains to any very great extent.

Still, we must confess that there has been considerable space in the BEE JOURNAL devoted to what might be termed "real estate matters" the past few months, and yet we had thought it was all in the interest of aiding our readers in various ways — physically, "educationally," or financially. But hereafter, we'll try to avoid the real estate business—so as to please Mr. "Business," and may be some others.

☞ When renewing his subscription to the BEE JOURNAL for another year on May 31st, Mr. Levi DeFreest, of New York, wrote, "A most excellent journal, and well worth the money."

Courses in Entomology at the University of California, located at Berkeley, include these two items under "Apiculture:"

a. Lectures, laboratory and apiary work, twice a week during the second term.

b. Supplemental laboratory and apiary work once a week during the second term.

Prof. C. W. Woodworth has charge of the entomological and apicultural work at the California Agricultural Experiment Station, which is in connection with the University of California.

Foul Brood.—The *Canadian Bee Journal* for June contains this notice of Dr. Howard's book on foul brood, which we published a short time ago:

We must compliment Dr. Howard, who is also an able bee-keeper, upon his painstaking investigations of this disease. In these he's done a great service to bee-keepers, and we can only hope that they will take a sufficient interest in these valuable investigations so procure a copy. The investigations so carefully carried on have cleared up questions in which science and practical experience appeared to conflict.

We mail this book for 25 cents, or club it with the BEE JOURNAL for one year—both for $1.15.

The Orange Judd Farmer.—A controlling interest in the capital stock of the Orange Judd Farmer Company of Chicago, Ill., has been purchased by the Orange Judd Company of New York City, and by gentlemen connected with that corporation. That concern has a world-wide reputation as publishers of rural books, and more especially as publishers of the *American Agriculturist*—for over fifty years the only illustrated monthly magazine of agriculture and domestic affairs. The *Orange Judd Farmer* will be maintained at its present high standard.

The new arrangement brings to the Orange Judd Company the backing of the ample means, successful experience and superb organization long enjoyed by the parent corporation at New York. This brings under essentially one management the two journals founded by the late Orange Judd. His son, James Strong Judd, who has so ably conducted the *Orange Judd Farmer* since his father's death—and to whom these new arrangements are very satisfactory—will continue to be actively associated in its business management.

Good Honey-Sellers will likely be needed soon, and the little 32-page pamphlet, "Honey as Food and Medicine," has for years proven itself valuable in making repeated sales of honey. Its distribution will *create a demand* for the honey first, and then the bee-keeper can follow it up and supply that demand. Send to us for a sample copy, only 5 cents; 10 copies, postpaid, 35 cents; 50 copies, $1.25; or 100 copies $2.00. Try 50 or 100 copies, and prove their ability to aid you in disposing of your honey at a good price.

No. 73—L. D. Stilson.

The subject of this subject and portrait below was born in Alden, N. Y., on July 26, 1839. He lived on the old home farm until the beginning of the

L. D. STILSON.

Civil War, when he enlisted as a private in Co. D., 49th New York Volunteers.

His school-boy days lasted until 8 years old for summer, and 14 years old for the winter school, and at the close of the last winter's school, while chopping wood among the wind-fallen timber, a colony of bees was found in a hollow log, which was cut off above and below the bees, and drawn home on a hand-

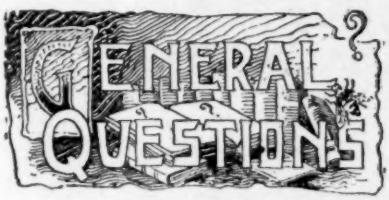
sled. This was the nucleus of future bee-keeping.

Returning from the army a physical wreck of his former self, bee-keeping showed a fairly good opening for a cripple, and so he went to work with a will, and soon had about 100 colonies in the back yard. By always striving to have his honey in extra-fine condition, Mr. S.'s sales were uniformly good, and during the years from 1865 to 1869 prices reached 75 and 80 cents per pound for comb honey.

In 1864 the manufacture of bee-hives and fixtures was begun on a small scale, and continued for five years, when, on account of continued ill-health, it was decided to change climate. In March, 1870, a westward move was made, landing on the broad Nebraska priarie in York county, then unorganganized. There he opened out a farm, with hired help, and has since made it his home. He is located one-half mile outside the present limits of the city of York. In connection with two sons, Mr. Stilson built a shop for the manufacture of apiarian goods, which they have made and sold for the past seven years. There, also, is published the *Nebraska Bee-Keeper*, of which Mrs. Stilson is the editor.

Fruits, flowers, and garden truck are raised for the markets, which with an 80-acre farm and the apiary, give pretty steady employment for the husband and wife, three sons and a daughter, besides hired help in time of hurry. Amid this hurry and bustle, Mr. Stilson can always find time to talk bees to any and all comers, while fine samples of honey are always "on tap."

Mr. S. is now serving his third year as Secretary of the Nebraska Bee-Keepers' Association, and as one of its officers has done much to accomplish the establishment of an experiment apiary at the State University. For the past two winters he has been engaged to lecture on bees in the Farmers' Short Course at the University, as well as at various Farmers' Institutes throughout the State.



ANSWERED BY

DR. C. C. MILLER,

MARENGO, ILL.

In this department will be answered those questions needing IMMEDIATE attention, and such as are not of sufficient special interest to require replies from the 20 or more apiarists who help to make "Queries and Replies" so interesting on another page. In the main, it will contain questions and answers upon matters that particularly interest beginners.—ED.

Introducing Queens.

I successfully introduced nine queens in succession by thoroughly smoking the bees with tobacco smoke, and opening the cage and letting the queen run in, but failed on the tenth. The tenth was during a honey-flow—the others promiscuously. Why did I succeed with the nine and fail on the tenth? Is it a good plan? L. H.

McLean, O.

ANSWER.—There are some things about bees you mustn't expect ever to find out. The thing you want now to know, is one of them. If you will notice the different reports of plans for introducing, they are not generally given as infallible, but succeeding so many times in so many cases. The next 5 or 10 or 20 times you may succeed all right, but I suppose in the exceptional cases of failure there is some little kink of difference not easily noticed, either in your plan of operation or in the condition of the bees. If you succeed nine times out of ten, I should say the plan is not a bad one.

A Queen-Cell Question.

This spring I had a colony of bees that were preparing to swarm by building queen-cells. As I did not want this, I divided them, putting the queen and most of the brood on the new stand, and the eggs and most of the bees on the old stand. I cut all the queen-cells out of the old colony, but one fine looking one containing an egg; this the bees furnished with royal jelly and sealed over. To-day (about 2 weeks after) it was

sealed, and I opened the hive, expecting to find a fine young queen, but as the cell was still sealed, I thought something was wrong, and opened it. It contained nothing but some royal jelly.

Guthrie, Okla. T. F. N. G.

ANSWER.—Sometimes, without any apparent reason, bees will have a queen-cell with a dead larva in it, and if it is sealed they don't seem to know any better than to leave it sealed up to fool the bee-keeper. In the present case, however, it is quite possible we may find the reason in the weather. There have been severe changes, and there has been some very cold weather in which the bees may have cuddled together, leaving the queen-cell out in the cold.

I think there must have been a larva in the cell, although jelly and larva may have been so dried up as not to be easily distinguished. I can hardly imagine that the bees would seal up a cell containing no larva.

If I had been in your place I would have saved a sealed cell, or else waited till the cell was sealed before dividing.

As you left most of the brood with the old queen, it is quite possible she may issue with a swarm as soon as sufficient strength is recovered.

Next time, try putting the queen on the old stand, and most of the brood and bees on the new stand. You see, as you have done, nearly all the older bees would leave the queen and go back to the old stand. So the queen would not be induced to lay as much as she would on the old stand with field bees bringing in abundant stores. In a natural swarm the old queen has most of the bees and no brood, and it's hard to improve on that. Although I say put most of the bees with the brood on the new stand, yet in a day or so you would find most of the bees back on the old stand with the old queen.

Bees In-Doors Leaving the Hives.

I neglected my bees two days during the warm weather in March, and when I opened the bee-house everything was in confusion—the bees had crawled out all over the floor and sides of the wall, so thick that I could not walk without killing great numbers of them. But I got out 11 colonies, and left them out. In two days a cold wave appeared again, and the temperature went down to zero. I then looked at the bees, and they were still on floor and wall, but to hum their sweet notes no more. The result is, I have 11 out of 40 colonies put in last November. I wish to ask if there is any way to get them back into the hives, should it ever happen to me again? Or what is to be done with them? J. W. M.

Rodney, Mich., May 16,

ANSWER.—You don't give full particulars, but as nearly as I can make out, you winter your bees above ground, the bees having no chance to fly till carried out, and it became so warm in the bee-house that large numbers of the bees came out and scattered around.

I suspect that in the warm days of March it was not the heat so much as the bad air that made the bees leave their hives. In the hottest days of summer you know the heat does not make the bees leave their hives. It may make them cluster out, but they stick to the hive. But those same bees shut up in a close box on a hot summer night would very likely scatter about just as yours did.

If the supposition is correct, that bad air is the cause of their scattering about, then the remedy is clear. Give them better air. Open all doors and windows at night, shutting them in the morning when the bees show signs of flying out. At the time your bees were making such trouble, mine were in the cellar, in one room 160 colonies, and they became uneasy. Every night I opened doors and windows. When the fresh air came into the cellar they roared as if there was going to be a general exodus. In the morning, however, everything was quiet, and sometimes the sun would shine in upon the hive for some time before any bees seemed to want to fly out. They were then left in till April 18, and came out in splendid condition.

Nectar Secretion, Surplus Honey, Etc.

1. Do flowers secrete honey when wet with rains or heavy dews?

2. Can sections that are filled and capped be taken from the super and replaced by sections containing foundation starters?

3. Can a super containing sections that are filled and capped be taken off and replaced by an empty one containing sections with foundation starters, without injuring the work of the bees?

4. Is it necessary to have the entrance of the hives at the end of the frames?

5. Will bees build straight combs in sections without foundation, separators being used?

6. Which are the best for working qualities—the Carniolans or the Italians?

7. Will the California honey-plant, alfilaree, grow as far north as latitude 43? SUBSCRIBER.

New York.

ANSWERS.—1. Yes, I suppose the wet does not stop the secretion of nectar, although it may wash it out, and may also so reduce its strength that it will be worth less, if not worthless. Some flowers are affected less than others. The raspberry is a fine honey-plant, and its flowers hang down in such a way that a shower affects them little.

2. Yes, but it's better to take off a whole super at a time, waiting till all but a few of the outside ones are completely finished. If, however, I had only one or two colonies, I don't know whether I could wait after I saw the first section sealed over.

3. Yes, but don't wait for the first super to be finished. When the first super is about half filled, put a fresh super under it.

4. No, some have it at the side.

5. No, don't attempt it. You can get along without separators, but not without foundation or starters of comb in sections.

6. Those who prefer the Italians say they are best. Those who think the Carniolans are best prefer them. "You pays your money, you takes your choice." The larger number prefer the Italians.

7. I don't know. Probably not.

Convention Notices.

WISCONSIN.—The next annual meeting of the Wisconsin Bee-Keepers' Association will be held at Madison, on Feb. 8th and 9th, 1895.
Madison, Wis. J. W. VANCE, Cor. Sec.

NORTH CAROLINA.—The Carolina Bee-Keepers, Association will meet at the Court House in Charlotte, N. C., on July 19. 1894, at 10 a.m. All interested in the culture of the honey-bee are cordially invited.
Steel Creek. N. C. A. L. BEACH, Sec.

PENNSYLVANIA,—The Venango County Bee-Keepers' Association of northwestern Pennsylvania will hold their 2nd annual meeting in the City Hall at Franklin, Pa., on Jan. 28, 1895, at 1 o'clock p.m. All interested send for program. C. S. Pizer, Sec.
Franklin, Pa.

TENNESSEE.—The next annual meeting of the East Tennessee, Bee-Keepers' Association will be held at Whitesburg, Tenn., beginning on Thursday, August 16, 1894. All members and other interested in bee-culture are invited to attend. H. F. COLEMAN, Sec.
Sneedville, Tenn.

Have You Read page 771 yet?

CONDUCTED BY

MRS. JENNIE ATCHLEY,

BEEVILLE, TEXAS.

PROFITABLE BEE-KEEPING.

Lesson No. 4.

(Continued from page 719.)

QUEEN-REARING.

I will first give queen-rearing in a small way, then on a large scale, as queen-rearing proper is a business by itself, separate from the general line of honey-production.

First, I will tell you that if you only wish queens for your own use, and you have one or more queens that you wish to breed from, you can wait until swarming time, and as soon as a swarm issues from a colony that you wish to save cells from, see how many cells they have, and go to work and prepare a nucleus for each, counting all except one to be left in the parent hive. Usually about the eighth day is the time to move the cells, but there are exceptions to this, as a swarm may be kept back from swarming by bad weather or some other cause until the cells—some of them—may hatch in two or three days. This you can tell by close watch, and should one hatch, you can remove the balance. Any way, you can have the nuclei ready, and move the cells before they hatch; and to put you nearer right, you can move the cells just as well on the fifth or sixth day, or as soon as sealed, if you have any doubt they will hatch soon. But the nuclei should be made about three days before the cells are moved, then they will seldom tear the cells down.

If you have undesirable drones in your yard, you must move the young queens beyond their reach—say two miles—or put drone-excluders over *all* the entrances of the hives with undesirable drones. In short, if you wish to have your queens mate purely, do not allow any but pure drones to fly within

two miles until your queens are mated. Later on, in another lesson, I will tell you how to form nuclei.

Now, this plan of queen-rearing is an excellent plan to get a good lot of queens without much trouble, and 25 to 50 queens can be reared at a very small expense.

If it transpires that you have no swarms, and you desire a few queens you can take out of one to two (or as many as you choose) queens that seem to be your poorest layers, and give a frame of eggs and larvæ from your select queens. A partly built-out new comb is best, or a half sheet of foundation placed in your breeders' hive until eggs and small larvæ are shown, then hang this new comb in the center of the hive you have made queenless, giving a little more space than common, so as to allow the bees room to extend the cells.

Then about the eighth or ninth day you can pinch off all the short, dumpy cells, and save none but the best or largest ones; and on the tenth day from the day you gave the frame, move all the cells to the nuclei except one that you will leave in the hive. Don't forget to prepare the nuclei at least three days before it is time to move the cells. The cells built in this way will likely hatch on the eleventh or twelfth day, and about the ninth day after you removed the queen from the cell-building hive, you had better go through and tear down *all* the cells they have started on their own combs and from their own stock, else a queen may perchance hatch out on the tenth day from the time you removed the queen, and tear your fine cells all down; then you would be in a fix. But by this plan you can get *good* queens, and is to be used when you have no chance to get natural cells.

Now, dear reader, I propose to give you the *most* complete lessons on queen-rearing that ever appeared in print, and to do this it will take time, patience and work, as it *cannot* be told in a few words.

Now if you are of a speculative turn of mind, you can try your hands at grafting natural queen-cells, or what we sometimes term "fooling the bees." This can be done with any kind of bees that are preparing to swarm. Should you have a colony starting cells, or preparing to swarm, you can remove the little larvæ from the cells they have started, and place instead larvæ from your breeder. This can be performed with a little short stick slightly bent on the point (a broom-straw will do). Just reach down under the larva and move it from the jelly, or if you take a little jelly along with it, all the better. Let it down into the cell after the one is taken out that was there, and so on until you graft all the cells they have started, and if you are pretty steady-handed, you will likely make the transfer without losing many. Then, when ready to move, treat as before, and you will also get nice queens.

All this you can do without being much of a queen-rearer, as nature does all after you make the transfer, and nature will also tear all down if you don't look out and get all cells moved before any queen hatches. This I repeat lest you get careless, as this is the *main* point where so many fail.

Now the three ways I have just explained are good enough to get queens for your own use, and possibly a few to spare, and these plans will interfere but little with the production of honey, and to keep your bees up to the standard and have good stock. Select good stock to rear your queens from, also good stock to get your drones from, and mate the queens to nothing but select drones. If you get drones from a different strain of bees from the queens, all the better; but I would not be so particular about this, as I have failed yet to find that a regular line breeding runs the stock down any. But it seems to be our nature to keep down in-breeding in bees as well as chickens, etc.

I will try to explain in the next lesson *all* about rearing queens on a large scale, or for market, and have *all* good queens—just as good as natural queens, as I have failed to see any difference in five years watching.

JENNIE ATCHLEY.

(To be continued.)

How to Keep Queens When We Have a Surplus.

[The following was published in *Gleanings* for May 15th, but we take the liberty of copying it into this department unbeknown to Mrs. Atchley. Bro. Root calls it "an excellent suggestion," so we think Mrs. A. will not object to our selecting it, and putting it in her part of the BEE JOURNAL.—EDITOR.]

For the last two years I have not had a chance to put in practice my plans; but I have tried them sufficiently to know that it is an excellent way to keep queens that we have no immediate use

for, and at the same time we wish to keep the nuclei at work rearing queens as fast as the young queens have laid two or three combs of eggs.

I used to keep them caged on a table, ready to go at a moment's notice, when an order came. Well, sometimes orders did not come for several days, and my queens, of course, were more or less injured if kept too long in this way; and to make it profitable we cannot afford to let the nuclei keep their queens till orders come to take them. To overcome this trouble, I went to work and constructed a lot of small hives, just large enough to hold two sections 4¼ inches square by 1⅛ inches wide. All these sections that we had unfinished we lay by to go in our little nuclei. Now, we could take from 50 to 100 workers, or enough to keep the queen in good shape.

It is no trouble to speak of, to prepare 200 or 300 of these little nuclei, something after the little Alley nuclei. We may use little frames if we choose. I use the sections, as they usually have plenty of honey to last the queen and bees a month or more, and the queen will go to laying, and assume the same attitude of a large colony. Then the queen is never so filled with eggs that it would be dangerous to cage and mail her right off. I do not like to cage and mail a queen that is in full laying plight without giving her time to unload herself of eggs. Well, the little-nuclei plan has the queens in good shape to be mailed at once without any danger of being injured.

To keep the queens and bees from swarming out, I use, over the entrance, one perforation of queen-excluder zinc, and robber bees will never enter through the zinc to amount to anything. These little hives can be placed on a shelf in the shade, moderately close together. We may make a record of where each queen was taken from; and if we keep any of them long enough they can be tested, and all the finest ones selected to fill orders for select queens.

Robbers have never bothered our little hives, as we seldom have a surplus of queens till the weather gets warm and honey is coming in so there is no danger of robbers. I do not like the idea of rearing queens in little hives, as the queen and bees are too likely to swarm out, as we cannot keep excluding-zinc on till the queens have mated, which gives them every chance to leave.

If the bees should take a notion to swarm out of the little hives, where our laying queens are, there will always be bees enough return to be a good retinue for the queen. Then these little nuclei are good to introduce another queen to as soon as one is sold out. I think I can rear a third more queens with a given number of nuclei by this method.

These little hives can be made cheaply at the factories, as scraps will answer for them.

If you do not think this a good way to keep your surplus queens, just try it.

JENNIE ATCHLEY.

Young Bees and Storing Honey.

Query 928.—What proportion of bees less than 16 days old should be in a colony during a white clover flow, to secure the storing of the greatest amount of honey?—Theorist.

I don't know.—EUGENE SECOR.

I do not know.—MRS. L. HARRISON.

I don't know.—MRS. JENNIE ATCHLEY.

A very large proportion—say one-half.—G. L. TINKER.

About 75 per cent., or thereabouts.—W. M. BARNUM.

I don't know. I am not a "theorist."—MRS. J. N. HEATER.

I don't know. I never take the trouble to sort them over.—E. FRANCE.

As many as a *good* colony in a normal condition contains.—G. M. DOOLITTLE.

Guessing is never very profitable, but I should guess about one-half.—A. J. COOK.

I have never conducted any experiments to determine the question.—J. P. H. BROWN.

A number sufficient to care for the brood and perform other in-door labor.—J. A. GREEN.

I never pay any attention to the age of the bees, so I have the quantity.—JAS. A. STONE.

I do not know, but I do not think there is any danger that there will be too many.—M. MAHIN.

I guess the number that would naturally be in a normal colony that has not swarmed.—J. H. LARRABEE.

As many as are required to nurse the brood, work wax into comb, and maintain the necessary heat.—C. H. DIBBERN.

It depends upon how long the flow is to last. We want all the bees we can get during the clover flow, because we get something else afterwards.—DADANT & SON.

I do not know. The future value of a worker-bee depends more upon the amount of labor it has performed than it does on the number of days it has lived.—EMERSON T. ABBOTT.

To answer this would require an article. In brief, all that one good queen can be induced to rear up to two weeks before the end of the honey-flow; after that, ⅓ or ⅔ as many.—R. L. TAYLOR.

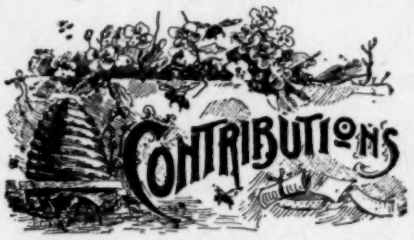
I don't know, but I'm growing toward the opinion that the bees left to themselves will not have too many. Moreover, I suspect they may change to the right number by having bees start to the field sooner or later than 16 days.—C. C. MILLER.

This question, to my mind, is wholly theoretical. The colony should contain a full force of foragers at such time, and with a good queen brood-rearing will be constantly going forward. Some advise removing the queen during the honey season.—J. E. POND.

I do not know that I understand what "Theorist" is driving at. If he means at what age a bee will gather the most honey, I shall have to acknowledge that I do not know, and if I did, I could not have them all of one age, so I am willing to take my chances with a good, full colony, and some hatching every day.—S. I. FREEBORN.

The only way that you can barely approximate the proper proportion of field-workers and nurse-bees at the time of a honey-flow is to select a colony that is storing honey as fast as the best working colony can. Now, take a look at the inside of the hive when the bees are all at home in the early morning, then examine them at about 11 o'clock, when the field-workers are in full force at work, and make your estimate. Perhaps the field-workers should be four to *one* nurse-bee.—G. W. DEMAREE.

A Binder for holding a year's numbers of the BEE JOURNAL we mail for only 50 cents; or clubbed with the JOURNAL for $1.40.



Non-Swarming and Large Hives.

Perplexities of an "Apicultural Literarian."

Written for the American Bee Journal

If the "honest reports and opinions from honey-producers who make bee-keeping pay" were not so largely theoretical in condemning opposite courses which they have *not* tried (not necessarily contradictory, but different), I might be diffident about contributing to that "perpetual curse" so pathetically alluded to by Mr. Heddon. As it is, I shall make no apology for inflicting a few theories on the readers of the BEE JOURNAL; for where angels fear not to tread, fools may be excused for rushing in.

When the "men who have produced honey by the ton" speak, we have a right to expect, either that they will satisfactorily answer our questions, or satisfactorily show why they cannot be answered. The calm indifference shown by the veterans to anything outside of the beaten track, as if there was but one road to success, makes me feel like slinging mud and adjectives and things, as Hasty says. Here's a challenge, and a bomb for you, Bro. Alley: The 8-frame hive with its methods is not the acme of comb-honey production! Now, 8-framers!

CONTRACTION OF HIVES.

Take the case of contraction. The more bees, of course the more honey consumed; and if in summer, outside of one short flow, no nectar at all is to be had, of course many are useless consumers.

Well, is that always or everywhere the case in short-flow localities? When not the case, is the mere absence of surplus sufficient reason for shutting down on the population?

If there is a *small* honey-flow from something or other, from spring to fall,

it may be that a bee which reaches the honey-gathering age after the main flow, will gather all it can eat during its majority, and pay its board-bill as a larva besides. What it gathers will not appear in the super; but contraction would not have caused any more to appear above. I suspect there are fewer localities of abundance followed by dearth than the contractionists would have us believe. In fact, such cannot be the case in at least some instances; for it is a peculiarity of Nature that extremes do not exist without intermediate stages. But they are silent on this point. If no appreciable amount goes into the supers except during the main flow, they unhesitatingly say "contract." (Contraction of swarms is a different matter, and, I believe, is always beneficial, except at the close of a flow). Besides being of no benefit in such places, contraction would cause us to lose the other advantages of constantly strong colonies, such as perfect immunity from robbing and moths, readiness for winter without any uniting, etc.

But that is not the only point left obscure. There are reasons for supposing that if a bee does not pay its board in honey, it may in other currency. Contractionists imply by their silence, even if they do not think so, that only bees of the honey-gathering age contribute to the storing of surplus. Now it's very nice to have such clean-cut principles to go by, if they are only true; but they are not. We are told that the old bees hand over their load to the young ones, and do not themselves deposit it in the cells. If so, it is reasonable to suppose that they do not dawdle around and superintend the operation, but go back for more. If that is the case, they can make more trips in a day, and bring in more honey, than when the number of home-staying bees is for any reason diminished.

We are also told that, at night, old and young devote themselves to evaporating the nectar by rolling each portion around on their tongues, and exposing it to the air. This reduces its bulk, and makes more room for the next day's gather. Otherwise comb-building would have to proceed at a much faster ratio than it does, or can. Now diminish the number of bees attending to this labor; will not the "input" honey also be diminished, for the same reason that colonies run for comb honey produce less than those run for extracted? There is less room to deposit loads; they have to wait to make it. Moreover, it is the home-staying bees that are best adapted to the comb-building, which is necessary.

I suppose the contractionists will admit that there should be *some* young bees during a flow. But how do they know the right proportion? Perhaps the bees can attend to that as well as we can. All these latter considerations, it is true, have more influence the longer the flow; but they must have some weight in the shortest kind of a flow.

LARGE AND SMALL HIVES.

In considering the subject of large and small hives, also, the puzzled theorizer finds that the matter is settled by reference to certain obvious advantages, while principles which may have considerable weight are not even alluded to, apparently by reason of their obscurity. Thus it is certain, though the fecundity of the queen is an important factor, and exceptions may occur, that in general bees are influenced in increase by the amount of food to fall back on. But because that influence cannot possibly be singly estimated or experimented on, while the results of manipulation on small hives are immediate and patent, the former is opposed, and the latter recommeded.

How many of our small-hive advocates, I wonder, have had 10 or 20 large hives in their yard from year to year, given them the different care which they demand, and made an accurate comparison of their results with those of the small hives? If one course is right, it does not follow, in this case, that the other is wrong—unless proved so by actual results. But that has not been done.

The science of large hives has been neglected. If the same amount of study and experiment had been bestowed on them which the small hives have received, who, at present, even of the men who have produced comb honey by the ton, is prepared to absolutely assert that the yield would not have been the same, even in proportion to the number of combs? It is possible that the reason the plan has not been more generally tried is that we are creatures of habit and imitation, not because it is inferior.

The cry is for more bees and less manipulation. But do we really *know* that the same number of colonies, with less and different manipulation, would not produce as much per comb? Whenever I see an argument to that effect, I invariably find it to be theoretical, whether the writer is a practical man or not. Owing to the success of manipula-

tion which controls population, the opposite course has been opposed from theoretical rather than empirical reasons. Would it not be well to go a little slow in unconditionally recommending small hives and contraction, until the alleged inferiority of other methods has been proved by actual results, in the same way in which the excellence of the small-hive system, with its appropriate manipulation, has been proved?

Here is an instance of what would be an unfair test: I transferred a colony to a large hive (capacity 12 Langstroth frames) one spring. They built up well, but did not succeed in filling the numerous empty combs with brood. When the honey-flow began I put on an empty super with sections. They let that super severely alone. After the main honey-flow was all over, I gave them two empty frames below. They filled them with comb and honey in no time. What might they not have done if properly managed! There was plenty of energy, but misdirected. With wide frames below I might have captured a big surplus; or if those superfluous combs had been solidly filled with last year's honey close up to the normal breeding space, as would usually be the case, I believe they would have exerted moral suasion in causing the bees to build up still better, and would have compelled them to put the "first pound of new honey" upstairs—for there would have been no other place to put it. If the outside combs had not been so filled, bait sections, or *temporary* contraction, might have accomplished the same object.

Of course that's all theory with me. (Since then I have had only 8-frame hives.) But it's practice with a few, and I would be greatly comforted—and so no doubt would many readers of the BEE JOURNAL—to know if large hives and intelligent letting alone won't work, just why they won't work; and if they won't work just because the bees say they shall not, let's know that—but do let's hear from somebody who has given both ways a fair test.

And, by the way, let no one object that large hives are unwieldy. The sectional hive is the hive of the future; it is not unwieldy, and may be made of any capacity.

Here are my theoretical claims, based on the teachings of some of the 8-framers, and an inconsiderable amount of personal experience:

1. If all empty cells below are crowded with one queen's capacity for brood-supply just before the flow begins, it does not matter, for results in comb honey, whether the remaining space is occupied by dummies or a small or large quantity of old sealed honey-comb.

2. We have had no decisive reason yet given us in theory, and no proofs at all in fact, to lead us to suppose that the surplus product will not be proportioned to the number of bees and combs, within a reasonable limit, which limit is not confined to a brood-chamber having a capacity of 8 frames, but usually wavers between 10 and 12.

3. Since the manipulation necessary for large hives is much less than that for small hives, being confined to *temporarily* contracting exceptional cases in which all empty spaces will not be crowded with brood just before the flow, the large hives, with our present light, are to be awarded the preference.

4. The preference of small to large hives for comb honey has grown up merely because of the carelessness of bee-keepers in leaving empty spaces below for the bees to store the first new honey in; and instead of saying "There is a limit to the size of the brood-*chamber* beyond which one cannot safely go," it would have been more scientific to have said, "There is a limit to room for the brood-*nest* on the first of June (or whenever it is) beyond which one cannot safely go."

Now, if that is all bosh, please don't "jump on me" too hard. Remember, I am the representative of a class who are honestly trying to understand what you 8-framers are telling us; and if you *are* right, you may be still a little bit to blame for not having presented your theories in the right shape.

"CLASS REPRESENTATIVE."

Bee-Veils—How to Wear Them.

Written for "Gleanings in Bee-Culture"

BY MISS EMMA WILSON.

I have been quite interested in reading about the different devices used for fastening the bee-veil, but so far I don't think I like any of them as well as my own—probably because it is my own, and is old and well tried, as I have fastened my veil so for years. Dr. Miller has also used it for some time, and pronounces it a success. He has been wanting me to write about it ever since Mr. Hutchinson gave his device, but I have kept putting it off. Finally, some remarks of Mr. Hasty, in the *Review*, have stirred me up to write. What he says,

like all that he writes, makes very interesting reading.

I get the impression that he has formerly been in the habit of tucking his veil inside his shirt-collar, and Mr. Hutchinson speaks of doing this also. Now, I should think that would be a most uncomfortable, choky way of disposing of a bee-veil. I don't wonder they want some different device. Mr. Hasty seems to have been very much pleased with the Porter method. Still he says:

"But [would you believe it?] I am not altogether happy yet. Like the children of Israel in Egypt, I sometimes 'fall a lusting,' and want to put my honey-dripping fingers in my mouth. To untie the string of the new device, and loosen up, takes too much time. Who will invent an elastic side-entrance, or something that will let me get at my 'potato-trap' with the minimum of hindrance? Moreover, I am sadly dependent on my spectacles, and want to put them off and on frequently. In this I can't so well deny myself as I might in the other case."

He also refers to Mr. Ernest Root's method of wearing his bee-veil under his suspenders, and says it will do very well for the men in warm weather. "But," he says, "in such a case, whatever and ever are the ladies to do, pray tell?" Now, I think that Mr. Hasty need not worry about the ladies. When it comes to fastening on a bee-hat or a bee-veil, they are away ahead. I confess my way is so simple I never thought of telling any one about it until one day Dr. Miller, who always lets his hang loose, complained of bees bothering him by getting under his veil, when I asked him why he didn't fasten his veil down as I did mine. He did so, and has fastened it down ever since. He had seen me fasten mine down for years, but I suspect he considered it rather fussy, and a waste of time, though I think it would take about three times as much time to get one bee out from under the veil, to say nothing of the sting.

I will say, for Mr. Hasty's benefit, that Dr. Miller uses his spectacles, and samples honey quite often, too, without unfastening his veil. We use a bee-veil with an elastic cord around the bottom. In the center of the front of the veil, at the lower edge, we place a large safety-pin, catching it through the hem of the veil, over the elastic cord, so there will be no danger of tearing out. It is always left hanging to the veil when not in use. When we put our hats on, the pins are there, ready for use. I usually fasten my pin by catching it through a button-hole; if not, I pin it to my waist. Dr. Miller pins his to one suspender when wearing neither coat nor vest. One pin is all that is needed, and the hand can be easily slipped under the veil when necessary. I pity the poor men, who cannot pin their hats on with a hat-pin. However, Dr. Miller thinks he gets on very nicely by tying his hat on with strings when it is very windy. But then, he doesn't know the comfort of a hat-pin.

Now, Mr. Hasty, please try my way and see if it isn't simpler, easier, more comfortable, and saving in time, having the security of the Porter plan, with the added advantage of comparatively free intercourse with any part of the face.

Mr. Hutchinson thinks an elastic in front would result in numerous folds in front of the face to obstruct the vision. In this locality, such a thing doesn't happen.

Marengo, Ills.

The Woodcock Foundation Fastener.

The *Bee-Keepers' Review* had this to say in its April number about a new foundation fastener invented by Mr. M. Woodcock:

Mr. Marcus Woodcock has invented a new foundation fastener. It works upon the hot-iron-melted-wax plan, its distinctive feature being that the section is left in an upright position, or rather the foundation is supported while the section is being turned into an upright position. The accompanying cut makes a description almost unnecessary. The machine is fastened to the floor, the upper part being placed against a table.

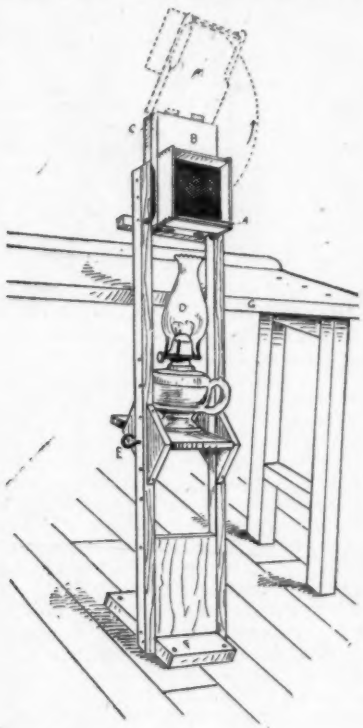
A metal plate is attached to a cross-piece, the plate being heated by a lamp placed upon an adjustable shelf. The part of the machine bearing the block over which the section is slipped is hinged at the top, and as soon as the sheet of foundation is dropped upon the hot plate that projects through the section just above the top-bar, this hinged part is swung outwardly and upwardly. As the section is swung out the heated plate is withdrawn, allowing the melted edge of the foundation to drop down upon the center of the top-bar. As the foundation is supported while the section is turning this summersault, it never lops over and breaks out as is sometimes the case with other fasteners in which there is no support for the

foundation while the section is being brought to an upright position.

Mr. R. L. Taylor has used the machine to put foundation in about 2,000 sections, and he pronounces it a "Double Daisy." He says it does the work easily and perfectly, and with comfort to the operator.

From the circular describing the Woodcock Foundation Fastener, we take the following:

I would respectfully call your attention to the merits of the foundation



fastener, as shown in the cut herewith. It puts the foundation straight in the center of the section, thereby securing a neat and straight section of honey.

It melts the foundation on the wood, causing it to adhere firmly, and, if properly done, the foundation will tear apart before it will part from the section.

It saves the foundation that is usually wasted by other methods of fastening, which, in a large apiary, would cover the cost of the machine several times in a single year.

In the directions for using we find this:

Fasten the machine to the floor by a screw, letting the top rest against a table or bench. Place a small lamp under the steel plate until the plate is hot enough to slowly melt the wax. Now regulate the lamp so as to maintain the right temperature by lowering the lamp, or turning the blaze down; for, if too hot or too close, it will scorch the section; it does not require much heat after the plate is once hot enough. Now, when the flopper is down, as shown in the cut at B, place the section over the block, letting the bottom come under the plate, drop the foundation lightly on top of the plate (*use no pressure*), and pull the flopper out. The foundation drops upon the section, and at once becomes a fixture. Continue in the same direction with the flopper until it is in an upright position, when the section may be removed and the flopper returned to its proper position to receive another section.

This is the only fastner on the market that leaves the section right side up when done.

With a little practice it will do the work very rapidly and satisfactorily.

Apiarian Exhibit at the Midwinter Fair.

Written for the American Bee Journal

BY W. A. PRYAL.

In my last about the honey exhibit at the International Fair in San Francisco, I stated that I would close my notice of honey and apiarian appliances by mentioning more fully that made by Mr. Mercer, of Ventura. Since my last letter was written, I have been to the Fair several times more, and I have found some additional exhibits of honey in out-of-the way corners, which, in justice to the exhibitors, I shall have to mention now.

Mr. Mercer's exhibit is the most novel honey exhibit at the Fair, and it is the only one that contains some of the appliances used in the apiary, excepting, perhaps, that of Mr. Archer, made in the gallery of the Horticultural Building—in truth, the latter may not be designated an exhibit of apiarian fixtures, as there is nothing there worthy of the name, except a bee-hive.

Mr. Mercer's exhibit is to this Fair what A. I. Root's exhibit was to the late Columbian Fair, although it is far

from being so extensive. It does not contain everything used in the apiary, neither does it profess to. I shall not attempt any description of the exhibit—that would take up more space than is at my command. Suffice it to state that surmounting the exhibit is a straw hive, the first one I ever saw in this State. There is a large frame holding 21 one-pound sections filled with honey, and a single gigantic frame about 48 inches long and 12 inches wide containing a single comb of white honey with the word "HONEY" in large embossed Roman letters in the center of the comb; the letters being part of the comb and honey that make up the entire frame. Some of these honied letters have not been brought out with that prominence that the "artist" hoped for. There are quite a number of small sections of honey, as well as a lot of jars of extracted honey.

The honey-knives, smokers, etc., are of Eastern make; the foundation, I believe, is Mercer's. He has a large frame of it so arranged that it makes a sign to announce to the observer that it is Mercer's. The letters are nicely cut out of foundation of a darker color than the foundation that forms the background of the "sign."

In the Shaster corner of the Northern California Building I found a case of very inviting-looking honey in one-pound sections. This honey was produced in Shaster county, near the northern limits of the State, and shows that the north end of the State can produce as fine looking honey as the southern portion can. Whether its flavor is as nice as that of the honey gathered in Southern California I cannot say, as I did not have a chance to sample it.

Two years ago the whitest and clearest honey I saw in the San Francisco honey market came from Monterey county, something like 150 miles south of the city named. I had hoped to see some of this honey in the main honey exhibit of the Fair. It was not there, however. This, as well as other things I have mentioned in previous letters, shows how poorly the honey exhibit was managed. Of this management I shall have more to say at the close of this letter.

Well, the last honey that I came across in my wanderings up and down the Fair was some from Monterey county. It is in the Monterey county building, close to the "Streets of Cairo." The entire exhibit made by this county, is a very creditable one. The honey is tastefully displayed in a case by itself, and is from the apiaries of Mr. Swenson and William Littlejohn, of San Maguel.

I understand that some additional California honey of this year's crop is to be sent to the Fair next week, so that it will be in time to be judged for a premium. It is to come from Alameda county.

The awards on honey, etc., are to be made at the close of next week, or early in the week following.

The prize honey shown at the Fair under consideration, is that from Nevada. It is some that did duty at the Columbian Fair. In this respect it is ancient, like that of Mr. Archer's, already noticed. I am not so sure that this honey was at the Chicago Fair, but one would be led to believe so, for the exhibitor has attached to it a badge of reward that he received for his honey at the Columbian Fair. If this honey did not take a premium at the White City it deserved to, any way. It is about the finest comb honey I have seen at the Midwinter Fair. The sections are better filled out than any of the California honey that I have noticed, and I observed pretty closely to see if all the honey from this State was well filled out to the edges of the sections. Those who sent honey to the Fair were evidently negligent in selecting their honey, for I am sure that they could have picked out sections that could be truthfully called "prize section honey."

I do not know whether the Nevada honey that I have been referring to will be in competition with our California product or not, but if it should, and should it be awarded first prize, our bee-keepers shall have no one to blame but themselves. They should have selected well-filled combs. As for whiteness of comb and clearness of honey, I am confident that no honey can compare with our own California product.

The "prize" honey mentioned is from the apiary of E. A. Moore, of Reno. I suppose it is alfalfa honey. J. T. Aiken, of the same place, also exhibits some of this fine comb and extracted honey in the same case. I did not notice any other honey from the State of Nevada. What is shown speaks volumes for the honey from the Sage Brush State. Californians should be glad to know that such fine honey is produced in that part of Nevada, for the time may not be far distant when the western half of the War or Sage Brush or Silver State will be annexed to California, and then will the reputation of this State for beautiful honey be raised another notch.

This completes the several parcels of

honey and other apiarian exhibits at the Fair; if I have failed to name any exhibit, it has been because I have not seen it. All those that came under my notice have been included in the reports I have made.

As I promised above to say more in regard to the reason why California has not had a better exhibit of honey at this Fair, I shall now do so.

In a letter I received from one of the executive or chief officers of the Fair a few weeks ago, that person stated that sometime ago the said chief obtained a pass on the railroads for one of the leading bee-keepers of the State, so that the said bee-keeper could go about among the honey-producers and induce them to make a creditable display of California honey at the Fair; the person to whom the pass was issued visited the Fair shortly after it was opened and selected a place where the exhibit was to be installed. This place, I have been told, is the location where the main honey exhibit is to be seen. The place may have seemed suitable enough at the time it was selected, but evidently since then it has been clearly demonstrated that it is anything but a suitable place. When the sun is out in all its brightness (and it comes out pretty hot some times, even in "midwinter" in San Francisco) it is hot indeed; and when Old Sol comes streaming down through a large glass dome, it is more than doubly hot. Then, when it rains, and it rains in the Pacific metropolis, too, sometimes, the glass dome, like all others of its kind, is apt to leak. This it has done, and the goods that the rain-water falls upon are sure to be more or less injured.

When I was at the Fair a few days ago, it was a rainy day—yes, it was one of those unusual days that we sometimes have in California—one of those days that reminds the visitor of a summer's day at home when it is apt to rain almost without a moment's notice; well, as I was going to say, it rained quite hard, and the rain came through the leaky roof in splendid style. The consequence was that some of the honey exhibits got wet. I do not think any of them were damaged, though.

But to the question under consideration. The Chief of the Department was surprised that the bee-keepers were not better represented, especially since he expected that the gentlemen for whom he had obtained the courtesies of the railroad company, had given him hopes of a splendid exhibit.

I do not think that the fault of the getting up of a suitable exhibit of California honey lies altogether with the bee-keeper alluded to; I think, as I know him to be an energetic young man, that he was not idle in the matter intrusted to him. It is possible that he called upon and tried to persuade a number of our bee-keepers to send a lot of honey to the Fair, so that we could make a fine showing, but the said bee-keepers did not take any interest in the subject. I am led to this belief, as I have heard that our bee-keepers do not take that interest in California bee-matters that they should. I may be mistaken; if I am, I am willing to be corrected.

At any rate, this has been another golden opportunity that California bee-keepers, like they did at Chicago last year, failed to take advantage of. It was not so much the fault of our bee-keepers that they were unrepresented at the Columbian Fair as it was the management of the California World's Fair Commission. The latter would do nothing to help them get up a suitable exhibit of the product of the California bee-hive.

As the matter stands, there is enough California honey displayed about the Fair grounds to show that this State can produce beautiful honey from Del Norte to San Diego, and from the Sierras to the Sea.

North Temescal, Calif., May 28.

Pollen in Sections—Bee-Management.

Written for the American Bee Journal

BY JOHN CRAYCRAFT.

I should have replied to Dr. Miller's question on page 491 before this, but bees-ness was pressing.

Yes, there will be some pollen to interfere with the sections below, and I only suggested such work in the event that the apiarist could see nothing better to be done. But such practice is not best or economical with practical work. Double up until you have strong colonies, and then my method will prove to be as nearly a perfect success as is usual in the course of Nature, there always being exceptions to all general rules.

My hives are square inside, 14¼x14¼ inches. Langstroth depth frames set across the entrance, so there is very little trouble with them to work this way.

I also rear all queen-cells over a strong colony. I take an upper story,

put on a bottom-board, cut a slot 8 or 10 inches long, and ¾-inch wide, and on that tack a strip of zinc (perforated), so the bees can work up through it, and make a small entrance to the outside over the entrance of the lower story, so that some of the bees may work out and in there.

I fill this story with combs ready for the surplus honey, and with these I leave them some sealed brood-frames. Cells will be started in a few days, if eggs are given.

I have, over one strong, quiet colony, reared from 10 to 15 fine cells each week for the past 4 weeks. I give them eggs to rear from each Saturday, and take away the sealed cells then, and give them to a nucleus to nurse and keep warm until they are ready to "pull."

I extract the combs with the rest of the apiary, and fill with combs, as is usual. There is no trouble about this way, and all the bees are where they will do the most good.

Then there is another thing I do that is not laid down as practical; that is, I have my hives close together, in a straight row, 8-inch space between them; and I find no trouble with bees quarreling, and my son, who is in Cuba, has his so close as to only have space for the roofs of the hives, and finds no trouble even in mating queens. He has 300 colonies all under sheds placed this way. All frames set across the entrance, and he works from the back of the hives. Such close work is not practical with the end entrance Langstroth hives, as you must be at the side of the hive to manipulate.

I was schooled to think that the regular length Langstroth frame was perfection, but when I come to results, I want the short frame (crosswise Langstroth, 10-frame size), 13⅜x9⅛ inches, for my use; I can rear more brood in a given length of time than I ever could in the long frame, and when I get the lower story full, and the honey season will admit, I move most of the brood above and fill below with combs, and thus economize the heat you lose in the large hive.

Astor Park, Fla., May 28.

Honey as Food and Medicine is just the thing to help sell honey, as it shows the various ways in which honey may be used as a food and as a medicine. Try 100 copies of it, and see what good "salesmen" they are. See the second page of last number of the BEE JOURNAL for description and prices.

Relation of Bees to Horticulture, Etc.

Read before the Farmers' Institute at Hamilton, Illinois, on February 1, 1894,

BY C. P. DADANT.

The honey-bee follows the white man in his civilizing course, in this country at least. It was unknown to the Indian, but an evidence that some such insect was necessary to the welfare of the wild flowers of America is to be found in the fact that the different species of wasps, hornets, bumble-bees, and other honey-gathering insects were very numerous when the country was first settled.

Bees are useful in the fertilizing of most flowers, and in some cases their presence, or that of some other honey-gathering insect, is indispensable to the production of fruit. Their role in this matter of fertilization will be the subject of my essay.

Most of you are acquainted with the elements of botany, and know the structure of flowers. The organs of reproduction consist of stamens, or male organs, and of pistils, or female organs. The pollen or fertilizing dust is produced by the stamens, and must reach the pistil, or the blossom is barren. More than this, it is necessary that there should be some intermingling or cross-breeding between the different flowers of one plant or tree, and also between the blossoms of several trees of the same kind, for in many cases barrenness would follow a too close in-and-in breeding.

The role of the honey-gathering insects is to bring about this crossing, and the honey-bee is, of all, the best fitted for it, for she not only gathers the honey, and in so doing scatters the fertilizing dust which becomes attached to the hairs of her body, but she also gathers this pollen and takes it home for her own usage. Have you ever watched a colony of bees in the busy season and seen the little insects coming home with their posterior legs loaded with a yellow substance that many people mistake for beeswax? That is pollen, which is "bee-bread," after it has entered the hive, as it is used almost entirely to feed the young larvæ in the course of their growth.

The bee carries her honey in her first stomach, or honey-sac, but Nature has wisely provided her with baskets—cavities on her posterior legs—to carry the pollen, and as this pollen is loosely packed in these cavities, loaded on much

as a farmer loads a rack with loose hay, small particles of it are dropped as she goes from blossom to blossom, and serve the purposes of fertilization.

In some plants the organs of reproduction, male and female, are on different blossoms, some distance apart, and in many of these plants the interference of the bee is absolutely necessary. The melon, cucumber and pumpkin are in this situation. The male blossoms of these plants produce pollen in such abundance that the bees that visit them often look as if they had rolled in powdered gold-dust, their hairs being absolutely covered with the bright dust. After visiting the male blossom for pollen, they go to the other for honey, and thus cause fecundation. Pumpkins and melons being closely allied, cross-breeding is possible, between them, with the help of the bee, when in close proximity, and the result is a mongrel vegetable which is of no use, except to illustrate the action of insects in this matter.

There are other plants, such as corn, in which the two blossoms, although some distance apart, are not visited by bees, for they have no honey; but these plants have the male blossom higher than the female, and the pollen is produced in such great quantities as to cover the ground about them. Of the same kind is the rag-weed, which covers our stubble-fields in August. The pollen of these plants is so plentiful that it pervades the air about us, and causes hay fever in persons who have a predisposition to asthma. In these cases the pollen falls upon the female blossom, or is carried to it by the breeze. But in some cases these agencies fail. Thus a single corn-stalk growing alone in the middle of a potato field may prove barren, even though very thrifty, simply because the pollen has been carried away from the tassel, by the wind, without reaching the ear.

In other cases, the reproducing organs are still further removed from one another, being on altogether different plants, as in hemp. In those cases, unless the pollen is produced in enormous quantities, the agency of insects is indispensable. In a few instances, plants under cultivation which were perfect in reproducing power when left to Nature, have become imperfect by cultivation. The strawberry is among these. A number of varieties have either no stamens, or very imperfect ones, so that they must be planted in close proximity with other varieties possessing both stamens and pistils. The use of the honey-bee has been clearly evidenced in this case, for the pollen of the strawberry is not very plentiful, and it grows so near the ground that breezes have but little effect, so that the agency of a pollen-carrying medium is plainly needed. At the meeting of the State Horticulturists in December last, an extensive strawberry grower stated that he had much larger crops since there had been a large apiary established in his near vicinity.

Is it necessary to give evidences that even in the case of the most absolutely perfect flowers, the agency of bees is useful or indispensable? Red clover has a blossom, the corolla of which is so deep that none of the pollen can well escape without the help of insects, and yet when red clover was imported into Australia, it was found impossible to reproduce the seed until the bumble-bees were imported there. The same red clover, it is well known, cannot bear seed in its first crop here because bumble-bees are not sufficiently numerous for its fertilization in the early part of the summer, and its corolla is too deep at that time for the honey-bee to reach the calyx.

Apple-trees do not bear fruit when blooming takes place during weather cold enough to keep the insects away from the bloom. The experience of the season of 1892 here, was a plain evidence of this, for although apple-trees were covered with a profusion of bloom there was no fruit. Why is it that a peach-stone, when planted, often produces a tree whose fruit will be entirely different from the peach from which it came? Because the blossom was fertilized with the help of insects by pollen from another tree.

In short, the agency of insects produces in fruit the same result that is produced in corn by the agency of the wind. Put white and yellow corn side by side in the same field, and the result will be a mixture of the two kinds produced by the cross-fertilization of the blossoms.

I believe that I have given sufficient proof that the honey-gathering insects are necessary to the farmer to help the crops of his orchard and garden. Let us now look at the other side.

It is said that bees may be too plentiful, and that their too oft-repeated visits to the blossom may damage the latter. Some say also that the honey which blossoms produce is necessary to their growth, and that, when not removed by the bee, it is absorbed by the fruit, and helps its development. If such be the case, the blossoms which are most visited by the bees must suffer, and sooner or

later become extinct. What are the blossoms most visited by bees? White clover, knot-weed — better known as smart-weed—Spanish-needle, asters, etc. The pests of your fields are the bees' favorites. Then you had best keep bees to help destroy those pests; but if the bees cannot destroy them, you must acknowledge that they are not injurious to flowers, especially if you find that those plants are the most numerous after the largest honey crops have been harvested from them.

But there is another stumbling-block. Are not bees injurious to sound ripe fruit? Do they not damage sound fruit in years of honey scarcity? During the fall of 1879 there was great complaint made of the bees on that score, in this vicinity, especially in the matter of grapes. These complaints induced us to make careful experiments on the matter, and I ascertained and will say now, not that I believe that bees cannot injure sound fruit, but that I *know* that they cannot, and that they may be starved to death upon it.

Some four or five years ago, a doubt of this assertion having been expressed in our public high school on this question, by the lady principal of the school, I offered to make a public test of this matter before the pupils, and this offer was accepted. The bees were attracted from neighboring hives to a table in the school-yard, and damaged fruit offered them. After they got fairly to work upon it, the damaged fruit was removed and sound fruit put in its place, and in the course of 15 minutes the bees had all abandoned the spot. I earnestly request those who doubt my assertions on this question, to make such a test for themselves. It is not difficult, and is conclusive.

Most of the damage charged to bees is done by birds, ants, wasps, and hornets do their share, but as the little honey-bee sometimes gathers the remnants so nothing may be lost, she is often accused as the leading perpetrator of the offence.

Let us, then, give full credit to these honest toilers, and let us remember that aside from their usefulness as plant fertilizers, we have great use for them as honey-producers.

Hamilton, Ill.

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Reports from Members of Ill. B.-K. A.

Written for the American Bee Journal

BY JAS. A. STONE.

I send herewith the condensed reports from members of the Illinois State Bee-Keepers' Association, on the condition of bees, and prospects of a honey crop for 1894. The reports are supposed to contain information in response to these four questions:

1. How many colonies have you?
2. What are the prospects of a honey crop?
3. What is the amount of honey gathered to date?
4. Is the honey No. 1 or not?

Here are the reports so far as heard from, May 15th to June 1st:

A. B. Anthony, Coleta—26 cols. Prospects very good. No surplus yet.

Frank H. Arnold, Deer Plain—86 cols. Prospects good for a spring crop. No honey. Bees in a starving condition.

Thos. B. Allen, Stirrup Grove—32 cols. Prospects very poor. No white clover. No honey so far.

James Bertram, Bristol—12 cols.; hives crowded with bees. Prospects not very good. White clover injured by drouth last fall.

M. Bevier, Bradford—43 cols. Prospects good. No honey.

S. M. Black, Clayton—30 cols. Prospects poor. No white clover, and very little to gather from. No surplus honey.

Frank Blecka, Elgin—18 cols. Prospects good—hope. Bees working in the sections. Honey No. 1.

Peter Blunier, Roanoke—51 cols., and all in good condition. Prospects not good; white clover thin. No honey except in the brood-chamber, and it looks to be good.

D. A. Cadwallader, Prairie du Rocher—22 cols. Prospects good. White clover abundant. No surplus honey yet, and no cases on. Bees swarming.

Dadant & Son, Hamilton—350 cols. Prospects poor. No honey.

Peter Dahl, Granville—128 cols. Prospects fair. No surplus honey. Some honey-dew.

Daniel E. Robbins, Payson—30 cols. The prospects very poor. No white clover, and a dry spring insures clean corn-fields, so no fall blooms. Honey enough to keep brood-rearing brisk. Honey-dew.

P. J. England, Fancy Prairie—26 cols. Prospects good, but no honey taken yet.

J. D. Everett, Oak Park—14 cols. Prospects very good. I do not know whether any honey.

W. J. Finch, Jr., Springfield—13 cols. Prospects very poor, and little white clover. Not any honey.

E. T. Flanagan, Belleville—275 cols. Prospects only fair. Not one pound of honey.

J. A. Green, Ottawa—118 cols. Prospects fair, and bees in first-rate condition. No surplus honey. Some honey-dew.

N. S. Hahn, Henderson. I have made no examination as to number of colonies. Prospects favorable, if dry weather keeps off. I cannot tell the amount of honey, but pollen seems ample.

J. M. Hambaugh, Spring—120 cols. Prospects very poor. No surplus honey, and do not know the quality.

Bernard W. Hayck, Quincy—74 cols. Prospects not good, but maybe a half crop of white clover. No surplus honey, and the honey is not No. 1.

Leroy Highbarger, Leaf River—70 cols. The prospects fair, but white clover is short from last fall's drouth. Enough honey to keep brood going nicely.

Wm. Little, Marissa—60 cols. Prospects not good, as the weather is cold, and bees are starving. No honey, the clover being badly injured by the late freeze.

J. H. Martin, Bloomington, Cal.—170 cols. The probabilities are, that there will be but little honey to ship from this portion of the State. Bees have hardly made a living, being fed in some localities. Not enough honey to grade.

Dr. C. C. Miller, Marengo—201 cols. The prospects are excellent.

Adna Phelps, Springfield—30 cols. Fair prospects. Cannot say as to the amount of honey, but think it is not No. 1.

Jas. Poindexter, Bloomington—150 cols., and the majority are weak. Prospects are not good; clover is badly killed. No surplus honey, but an average for brood-rearing. Good for source gathered from.

Geo. F. Robbins, Mechanicsburg—78 cols. Very poor prospects; the clover was all killed out last year. Just one thimble full of honey from fruit bloom.

A. I. Root, Medina, O.—150 cols., used for queen-rearing. Good prospects in our vicinity. In the the neighborhood of 10 pounds per colony. Quality of honey good.

J. Q. Smith, Lincoln—62 cols. So far the prospects are not good; no clover in sight. No honey.

F. A. Snell, Milledgeville—110 cols. Fair prospects. A liberal amount of honey for brood-rearing. No surplus honey to date.

Jas. A. Stone, Bradfordton—66 cols. No prospect of increase this year; the swarms are very small. Very poor prospects; white clover was badly killed the last week in March. Very little honey—honey-dew.

P. E. Vandenburg, Jerseyville—40 cols.; no swarms to date. Very poor prospects; bees have nearly stopped breeding. Not enough honey to keep up breeding, and not a sealed cell of honey.

Walter M. Van Meter, Era, Tex.—4 cols. Prospects are good, and have 50 pounds of excellent honey.

E. Whittlesey, Pecatonica—65 cols. Fair prospects; white clover was injured by drouth. No honey yet.

One report was sent in with name and address omitted, so we leave it out. Others are not received, but we cannot delay longer. JAS. A. STONE, *Sec.*

Bradfordton, Ill., June 12.

☛ **Do not write anything for publication on the same sheet of paper with business matters, unless it can be torn apart without interfering with either part of the letter.**

Bees Working on Alsike.

White clover is scarce, but our bees commenced work lively, since the latter part of last week, on Alsike.

CHAS. F. MUTH & SON.

Cincinnati, O., June 13.

Clover Coming Out Nicely.

We had a fine rain here, and the clover is coming out in good shape. I am hoping for a good year for honey.

EMERSON T. ABBOTT.

St. Joseph, Mo., June 12.

Carrying in Honey Now.

I have been feeding up to this week. Bees are carrying a little honey now. I am now hustling my queen work, as winter left us only last week. J. F. MICHAEL.

German, O., June 12.

Unfavorable Weather.

We had here unusually fine spring weather, and were anticipating a fine honey crop. But, alas! for about 12 days we have had rainy, cool weather. What will come next? H. DUPRET.

Montreal, Canada, June 8.

Melilot or Sweet Clover, Etc.

It seems there are yet a good many bee-keepers who know but little about sweet clover. As I have raised it for over 20 years, I think I have had some experience with it. I have sown it at nearly all times, and never had it to fail. I have sown it in the fall, in March, April, May and June, and it has always grown for me. I have sown it with wheat, oats and alone. It is not best to sow it too thick. It does not stay in bloom as long when sown too thick. I sow from six to eight pounds per acre; four pounds will do where it is all well gotten in.

I am sorry to say that if it was not for my sweet clover, my bees would surely starve. I have now fed 500 pounds of good clover honey this spring. My bees got a little honey from the maple, and not the

least honey since. There are not ten acres of white clover in this township. I took 39 colonies six miles to the north where there are some fields of mustard; they may get a living until the sweet clover comes into bloom.

To-day it looks the most discouraging I ever saw it. The corn was all frozen down, potatoes also; to-day it is hot and dry—everything drying up. Pastures are in very bad condition. White clover was all killed last fall by the drouth. If my bees can only get honey to go through the winter, I will be satisfied. We must have rain, or we will not raise anything here.

Compton, Ill., June 11. R. MILLER.

A Splendid Honey-Flow, Etc.

I am having a splendid honey-flow. I took off honey on May 4th.

I use bee-entrance guards on all my hives. The bees swarm, but always go back, as the queen cannot get out, and I think it is a good plan. WALTER R. WOOD.

Bellevue, Del., June 11.

Bees Doing Well.

Bees are doing well now, but they have had a hard struggle for life up to a few days ago. Bees died from cold, clustered on the outside of the hives, so my neighbors report. I lost none that way. I have 24 colonies now. D. A. CADWALLADER.

Prairie du Rocher, Ill., June 11.

CONVENTION DIRECTORY.

Time and place of meeting.

1894.

July 19.—Carolina, at Charlotte, N. C.
A. L. Beach, Sec., Steel Creek, N. C.

Aug. 16.—East Tennessee, at Whitesburg, Tenn.
H. F. Coleman, Sec., Sneedville, Tenn.

1895.

Jan. 28.—Venango Co., at Franklin, Pa.
C. S. Pizer, Sec., Franklin, Pa.

Feb. 8, 9.—Wisconsin, at Madison, Wis.
J. W. Vance, Cor. Sec., Madison, Wis.

☞ **In order to have this table complete, Secretaries are requested to forward full particulars of the time and the place of each future meeting.—THE EDITOR.**

North American Bee-Keepers' Association

PRES.—Emerson T. Abbott.....St. Joseph, Mo.
VICE-PRES.—O. L. Hershiser.....Buffalo, N. Y.
SECRETARY—Frank Benton, Washington, D. C.
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National Bee-Keepers' Union.

PRESIDENT—Hon. R. L. Taylor..Lapeer, Mich.
GEN'L MANAGER—T. G. Newman, Chicago, Ill.
147 South Western Avenue.

Honey & Beeswax Market Quotations.

ALBANY, N. Y., Mar. 23.—The honey market is very slow now. The demand is about over on comb. Some extracted wanted at 6c.; if dark color, 5c.

Beeswax, 26@27c. H. R. W.

BUFFALO, N. Y., May 14.—Trade is very slow, and we have still a liberal stock on hand. We quote: Fancy comb, 13@14c.; choice, 11@12c.; dark and common grades, 8@9c. Beeswax, 25@30c. B. & CO.

CHICAGO, ILL., May 10.—The market for comb honey is not of large volume at this season of the year; a fine article of white comb brings 15c. in pound sections. Extracted slow of sale, at 4@6c. Beeswax, 25c.

R. A. B. & Co.

CHICAGO, ILL., Mar. 24.—The honey market will be very quiet for the balance of the season. We will not do much business until new honey comes in. We cannot quote prices but will obtain the best possible price on what little stock we will sell until early fall. Beeswax is very active at 25@26c. J. A. L.

CINCINNATI, O., May 21.—Demand is very slow for extracted honey at 4@7c. Supply is large. Prices for comb honey are nominal, at 12@14c. for best white. Demand is slow.

Beeswax is in good demand, at 22@27c. for good to choice yellow. Supply is scant, and not enough arriving to supply our home trade. C. F. M. & S.

KANSAS CITY, MO., Apr. 6.—We have had an exceedingly slow trade on honey this season, and prices ruled comparatively low. We quote to-day: No. 1 white comb, 1-lb., 14@15c.; No. 2, 13@14c.; No. 1 amber, 12@13c.; No. 2, 10@11c. Extracted, 5@7c.

Beeswax, 20@22c. C.-M. C. Co.

NEW YORK, N. Y., May 25.—New crop of Southern honey is arriving freely. The market is well supplied and demand very light. We quote: Common grade, 50c. per gal.; choice, 55@60c. Beeswax is firm at 28c.

H. B. & S.

List of Honey and Beeswax Dealers,

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28 & 30 West Broadway.
CHAS. ISRAEL & BROS., 110 Hudson St.

Kansas City, Mo.

HAMBLIN & BEARSS, 514 Walnut Street.
CLEMOMS-MASON COM. CO., 521 Walnut St.

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H. R. WRIGHT, 326 & 328 Broadway.

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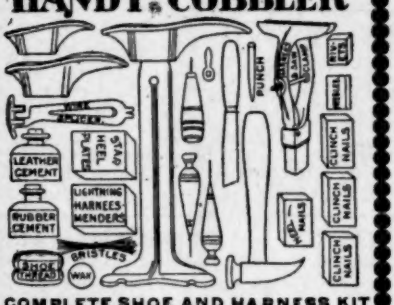

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